

Response  
Application No. 10/813,123  
Attorney Docket No. 042249

**REMARKS**

Claims 1-5 are pending in the present application. No amendment has been proposed. It is respectfully submitted that this Response is fully responsive to the Office Action dated March 21, 2006.

**As to the Merits:**

As to the merits of this case, the Examiner now relies on the newly cited references of Sullivan et al. (U. S. Patent No. 5,528,707) and Hinkov (U.S. Patent No. 5,920,662) in setting forth the following rejection:

claims 1-5 stand rejected under 35 USC 103(a) as being unpatentable over Sullivan in view of Hinkov.

This rejection is respectfully traversed.

With regard to the applied reference of Hinkov, the Examiner asserts that such reference discloses:

Hinkov teaches an optical path control device comprising an optical waveguide having a clad layer (e.g. 1) formed on a substrate (e.g. LiNbO<sub>3</sub>) and a core layer (3) staked on the clad layer, wherein a voltage is applied between a plurality of triangular prism electrodes (e.g. 5) placed on one side of the wave guide and a second counter electrode (8). (See e.g. Col. 5, ll. 35 - Col. 6, l. 42 and Fig. 6d) Hinkov teaches that the prism electrode structure provides an efficient means of

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directing the optical path of a lightwave signal traveling in the waveguide core (3) via a well-known prism effect which controls the refractive index of the core (3). (See e.g. Col. 4,11. 5-50)

However, it is respectfully submitted, as shown in Figs. 8a and 8b of Hinkov, that while the refractive-index in the waveguide 3 is changed when a voltage is applied to the electrodes; however, no change in the refractive index is induced in the ferroelectric lithium niobate crystal 1, which the Examiner asserts constitutes a clad layer.

This is in contrast to the device of the present invention which applies an electric field to the PN junction part to change the refractive index of both the core layer and the clad layer, and thereby controls the travelling direction of light.

Moreover, it is respectfully submitted that the secondary reference of Sullivan fails to disclose or fairly suggest the above-noted drawbacks and deficiencies of Hinkov.

As such, it is respectfully submitted that Hinkov and Sullivan, alone or in combination, fail to disclose or fairly suggest the features of independent claim 1 concerning *an optical path control device comprising an optical waveguide having a clad layer of P-type (or N-type) formed on a substrate and a core layer of N-type (or P-type) stacked on the clad layer, and electrodes formed on both sides of a part of the optical waveguide, wherein a voltage is applied between the*

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*electrodes to change the refractive index at the part of the optical waveguide where the electrode is formed.*

In addition, it is respectfully submitted that Hinkov and Sullivan, alone or in combination also fail to disclose or fairly suggest the features of independent claim 2 concerning *an optical path control device comprising an optical waveguide having a clad layer of P-type (or N-type) formed on a substrate and a core layer of N-type (or P-type) stacked on the clad layer, plural electrodes formed on both sides of the optical waveguide, plural incidence units provided at one end of the substrate, and plural emission units provided at the other end, wherein a voltage applied to an arbitrary electrode of the plural electrodes is controlled to change the refractive index at the part of the optical waveguide where the electrode is formed, so that light emitted from an arbitrary incidence unit and incident on the optical waveguide becomes incident on an arbitrary emission unit.*

In view of the aforementioned remarks, Applicants submit that that the claims are in condition for allowance. Applicants request such action at an early date.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact Applicants' undersigned attorney to arrange for an interview to expedite the disposition of this case.

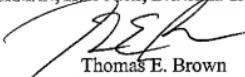
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If this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. The fees for such an extension or any other fees that may be due with respect to this paper may be charged to Deposit Account No. 50-2866.

Respectfully submitted,

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